

Using Phosphorylated Mannan Oligosaccharide and Fibrolytic Enzyme as Natural Feed Additive Substitutes for Growth-Enhancing Technologies in Sustainable Beef Production

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Abstract

The study objective was to determine the effect on beef production sustainability when growth-enhancing technologies (GET) were substituted with the natural feed additives (NFA) phosphorylated mannan oligosaccharide (Bio-MOS<sup>®</sup>-(MOS)) and fibrolytic enzyme (Fibrozyme<sup>®</sup>-(FIB)). Angus x Hereford x Gelbvieh steers, after weaning (n=80; BW=279.6±3 kg), were used in an 84-day backgrounding study (4 treatments; 4 pen replicates/treatment) that was followed by a 122-day finishing study. A control (C) treatment with GET (Revelor-IS<sup>®</sup> and Rumensin<sup>®</sup>) was compared to NFA (10mg/head/day): MOS, FIB, and MOS+FIB. Data were analyzed using mixed procedure of SAS. The backgrounding C steers end weight, weight gain, and average daily gain (ADG) were greater (P<0.01) compared to MOS, FIB, and MOS+FIB. Feed efficiency ratio did not differ (P=0.198). Feed cost/kg of gain was lower for the C treatment (P<0.01). The C treatment net return was 45.9% greater than the average of MOS, FIB, and MOS+FIB treatments. For finishing, the C treatment ADG was greater (P<0.05) compared to MOS, FIB, and MOS+FIB. In addition, the C treatment harvest weight and hot carcass weight were greater (P<0.01) and were harvested 5 days earlier. However, other carcass measurements did not differ (P>0.10). Ending net return was \$54.22, -\$33.62, -\$20.65, and -48.69 for the C, MOS, FIB, and MOS+FIB, respectively. The NFA were less profitable during backgrounding, but not profitable for finishing.

**Keywords:** Fibrolytic enzyme, Monensin sodium, Phosphorylated mannan oligosaccharide, Steroid implant, Sustainable beef production